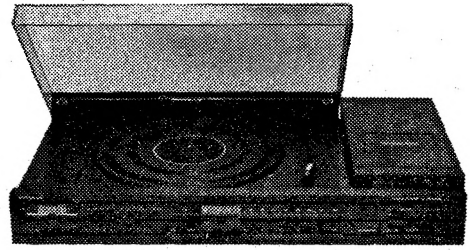
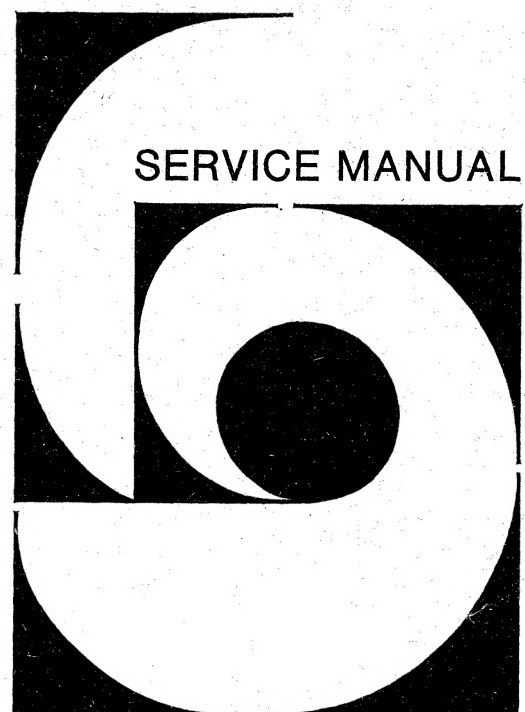


Bang & Olufsen



BEOCENTER 3600

TYPE 2611



---

**INTRODUCTION**

The Beocenter 3600 is the most recent addition to the Bang & Olufsen series of combination music systems.

The radio section and record player are identical with the Beocenter 1800 type 2610 whilst the cassette section has several features in common with the Beocord 1100 type 2612.

This service manual describes those circuits and individual components which are new in the Beocenter 3600. Otherwise reference is made to the respective section of the Beocenter 1800 and Beocord 1100 service manuals.

<b>CONTENTS</b>	<b>PAGE</b>
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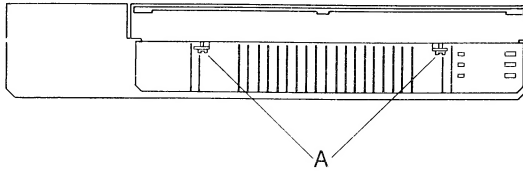
---

TECHNICAL DATA	BEOCENTER 3600
TYPE no.	2611
<b>AMPLIFIER</b>	
Power output at specified	
distortion 1000 Hz RMS	2 x 22 watts/4 ohms 2 x 19 watts/8 ohms
Music power	2 x 40 watts/4 ohms 2 x 25 watts/8 ohms
Speaker impedance	4 ohms
Harmonic distortion:	
1000 Hz 50 mW DIN 45 500	< 0.1%
DIN 45 500 40 - 12.500 Hz	< 0.3%
Intermodulation DIN 45 500	< 1%
Frequency range $\pm 1.5$ dB DIN 45 500	20 - 30.000 Hz
Power bandwidth 1% distortion	10 - 35.000 Hz
Damping factor 1000 Hz DIN 45 500	> 12
Pickup low impedance	2.5 mV/47 Kohms
2 channel linear	60 mV/47 Kohms
Signal-to-noise ratio DIN 45 500:	
50 mW pickup low impedance	> 50 dB
50 mW high impedance	> 60 dB
Channel separation 1000 Hz 45 500	> 55 dB
250 - 10.000 Hz	> 45 dB
Tape	25 mV/100 Kohms
Headphones	10V/200 ohms
Bass control at 40 Hz	$\pm 17$ dB
Treble control at 12.500 Hz	$\pm 14$ dB
<b>FM tuner</b>	
Range	87.5 - 108 MHz
Sensitivity stereo 46 dB	30 $\mu$ V/75 ohms
Frequency range $\pm 1.5$ dB DIN 45 500	20 - 15.000 Hz $\pm 1.5$ dB
Harmonic distortion DIN 45 500	< 0.6%
Stereo channel separation 1000 Hz	> 30 dB
Pilot suppression 19 kHz	> 35 dB
<b>RECORD-PLAYER</b>	
Speeds	33 - 45 rpm
Pickup cartridge	MMC 3000
Stylus	Spherical diamond
Radius of curvature	15 $\mu$ m
Frequency range	16 - 25.000 Hz
Recommended stylus pressure	1.2 gram
Compliance	25 x 10 <sup>-6</sup> cm/dyn
Effective tipmass	0.5 mg
Automatic pickup movement	Yes
Automatic speed selection	Yes
Wow and flutter, DIN	< $\pm 0.12\%$
Wow and flutter, WRMS	< $\pm 0.06\%$
Rumble DIN unweighted	> 37 dB
Rumble DIN weighted	> 60 dB
Speed deviation	< 0.1%
Speed control range	> 3%
Dial for speed	Stroboscope 120 mm
Stylus pressure range	0 - 2.5 gram
Antiskating	Yes
Motor	Asynchronous
Drive system	Idler wheel and belt
Turntable	30 cm 1 kg
Dust cover	Hinged and detachable
<b>TAPERECORDER</b>	
Compact Cassette	C60 - C90
Tape head	Super permalloy
Dolby NR	Yes
Iron oxide tape	Yes
Chromium dioxide tape	Yes
Indicator system	Light emitting diodes
Stop at end of tape	Yes
Wow and flutter, DIN	< $\pm 0.3\%$
Speed deviation	< $\pm 1\%$
Fast forward and rewind	90 sec.
Frequency range DIN chrom.	20 - 13.000 Hz
Signal-to-noise ratio chrom.	> 53 dB
With microphone	75 $\mu$ V/10 Kohms
with Dolby chrom.	> 61 dB
Erase	> 74 dB
Power supply	110 - 130 - 220 - 240 volts
Frequency	50 Hz
Power consumption	20 - 170 watts
Dimensions W x H x D	66 x 13.6 x 35 cm
Weight	16.9 kg

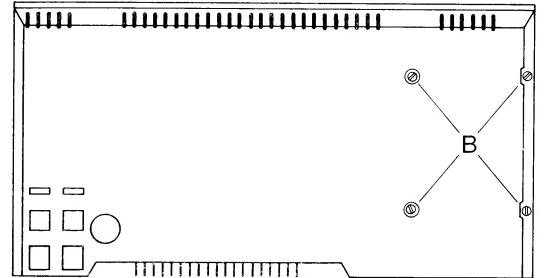
Subject to change without notice

## DISASSEMBLY/ZERLEGUNG

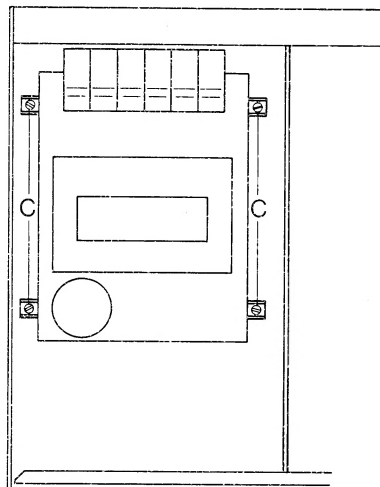
**Dismounting of record player**  
Abmontierung von Grammophonwerk



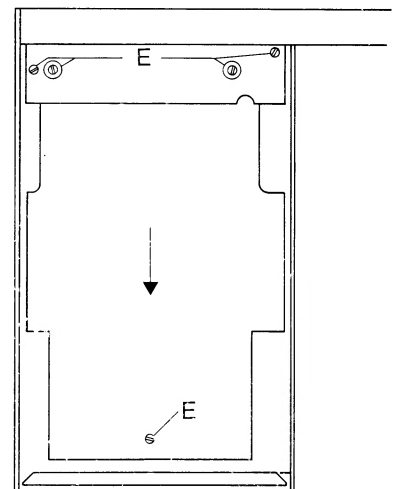
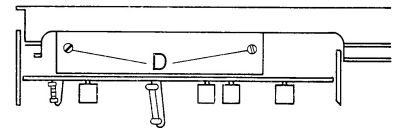
**Dismounting of cassette cover**  
Abmontierung von Kassettendeckel



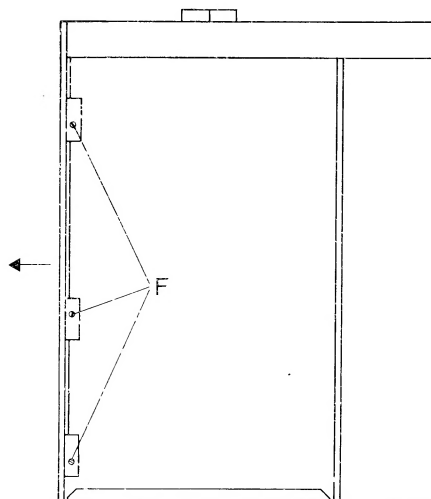
**Dismounting of tape deck**  
Abmontierung von Kassettenwerk



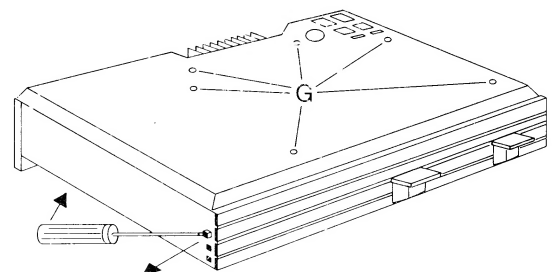
**Dismounting of PC for cassette recorder**  
Abmontierung von Printplatte für Kassettengerät



**Dismounting of cabinet**  
Abmontierung von Kabinett



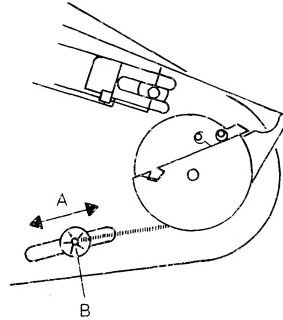
**Dismounting of bottom**  
Abmontierung von Boden



## ELECTRICAL ADJUSTMENT RECEIVER

Is made as described in service manual for Beocenter 1800 page 4-1 and 4-2.

## MECHANICAL ADJUSTMENT GRAMMOFONE CHASSIS



Put test record 3621001 on turntable.  
Play cut 4.  
Connect oscilloscope to right and left channels of the pickup leads.  
Push pin B as indicated by arrow A until the two channels have identical distortion.

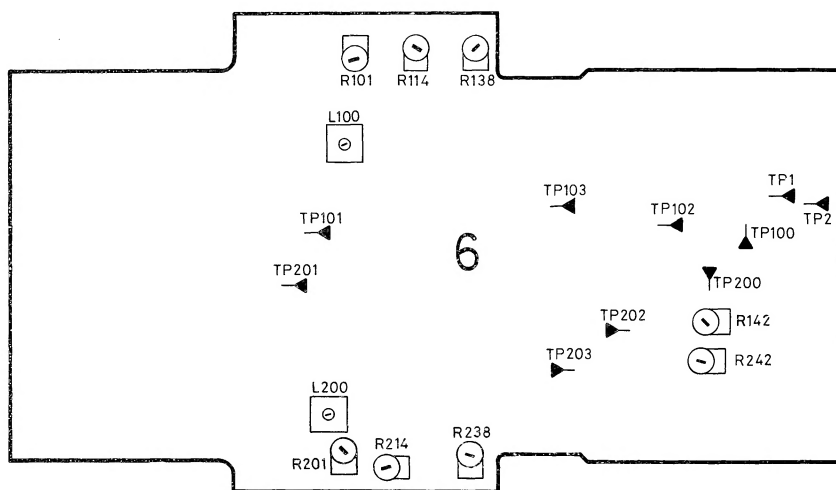
Other adjustments are performed as described in Beocenter 1800 manual, pages 5-1 to 5-3.

## ELECTRICAL ADJUSTMENTS

### TAPE RECORDER

#### Azimuth

Non-bracketed references apply to left channel; bracketed ones apply to right channel.



Demagnetise sound head and erase head.

Connect AF vacuum-tube voltmeter at 6TP100 (6TP200).

Insert azimuth tape 6780036.

Adjust screw A for max. response in both channel and identical output for left and right channels (mean value).

Lock screw A with glue.



#### 19 kHz filter

Connect tone generator at 6TP1 (6TP2). Set generator to deliver 19 kHz 100 mV.

Set 6R101 (6R201) to mid-scale.

Connect AF vacuum-tube voltmeter at 6TP102 (6TP202).

Adjust 6L100 (6L200) for min. AF vacuum-tube voltmeter reading.

#### Playback level

Insert Pegel tape (333 Hz), 6780035.

Adjust 6R101 for 720 mV as measured with AF vacuum-tube voltmeter at 6TP100.

Adjust (6R201) for 720 mV as measured at (6TP200).

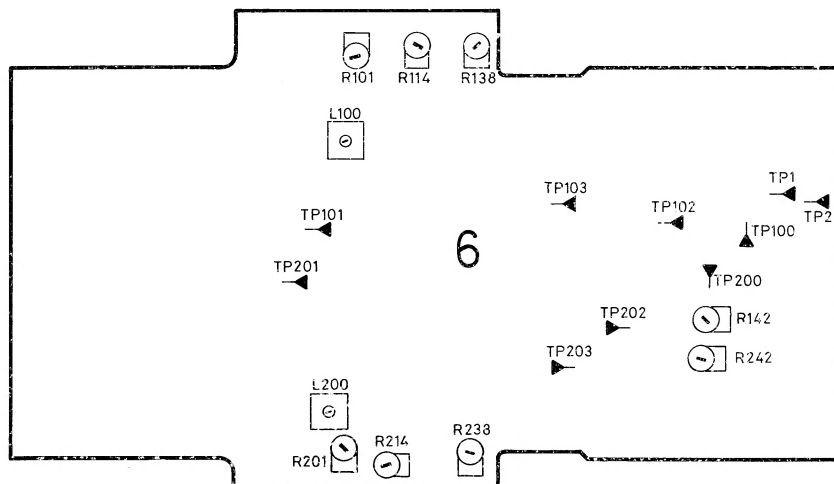
#### Playback frequency response

Activate CrO<sub>2</sub>.

Insert playback frequency tape 6780056 (time constants 70 usec and 3180 usec).

Adjust 6R114 so that 12.5 kHz level is max. 1.5 dB below 250 Hz level as measured with AF vacuum-tube voltmeter at 6TP100 (6R214 at 6TP200).

## Indicator and record amplifier



Stop erase generator (short-circuit 6C7).

Set tone generator to deliver 333 Hz 100 mV as measured with AF vacuum-tube voltmeter at 6TP1.

Connect AF vacuum-tube voltmeter at 6TP103.

Set record potentiometer so that 3V is measured at 6TP103.



Adjust 7R14 so that first red LED lights.

Back off tone generator 20 dB.

Read and note voltage at 6TP103.

Set tone generator to deliver 12.5 kHz.

Adjust 6R138 so that 12.5 kHz level at 6TP103 is 14 dB higher than 333 Hz level.

Set tone generator to deliver 333 Hz 100 mV as measured with AF vacuum-tube voltmeter at (6TP2).

Connect AF vacuum-tube voltmeter at (6TP203).

Set record potentiometer so that 3V is measured at (6TP203).

Back off tone generator 20 dB.

Read and note voltage at (6TP203).

Set tone generator to deliver 12.5 kHz.

Adjust (6R238) so that 12.5 kHz level at (6TP203) is 14 dB higher than 333 Hz level.

Remove short-circuit from across 6C7.

## Bias

Set tone generator to deliver 333 Hz 100 mV as measured with AF vacuum-tube voltmeter at 6TP1 (6TP2).

Connect AF vacuum-tube voltmeter at 6TP100 (6TP200).

Insert standard tape 6780040.

Adjust record potentiometer so that first red LED only just lights.

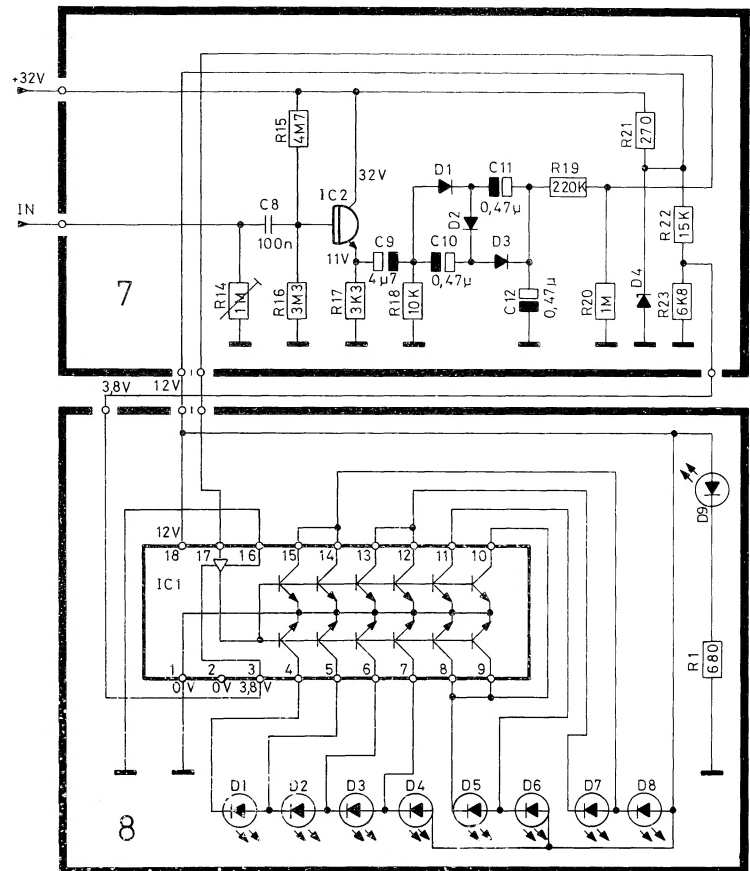
Back off tone generator 20 dB.

Record and play back 333 Hz and 12.5 kHz. Adjust 6R142 (6R242) so that 12.5 kHz level is 2.5 dB below 333 Hz level.

## ELECTRICAL DESCRIPTION

## CASSETTE RECORDER

## Indicator



The recording level in Beocenter 3600 is indicated by means of light diodes (LED).

The LF signal on the output of the recording amplifier is led to basis of 7IC2 which is coupled as emitter follower. The signal is led to the voltage tripler 7D1, 7D2, 7D3, 7C10, and 7C11. 7C12 is charged to a varying DC voltage, the value of which is directly dependent on the amplitude of the LF signal, and is led to a DC amplifier in 8IC1, pin 17. A reference voltage 3.8 Volts on pin 3 determines the range of variation of the indicator.

The output of the DC amplifier is led to basis on a number of switch transistors so that the outputs on 8IC1 are short-circuited to chassis at increasing voltage in the order pin 15, 14, 13, etc. I.e., 8D8 is the first green LED to switch on.

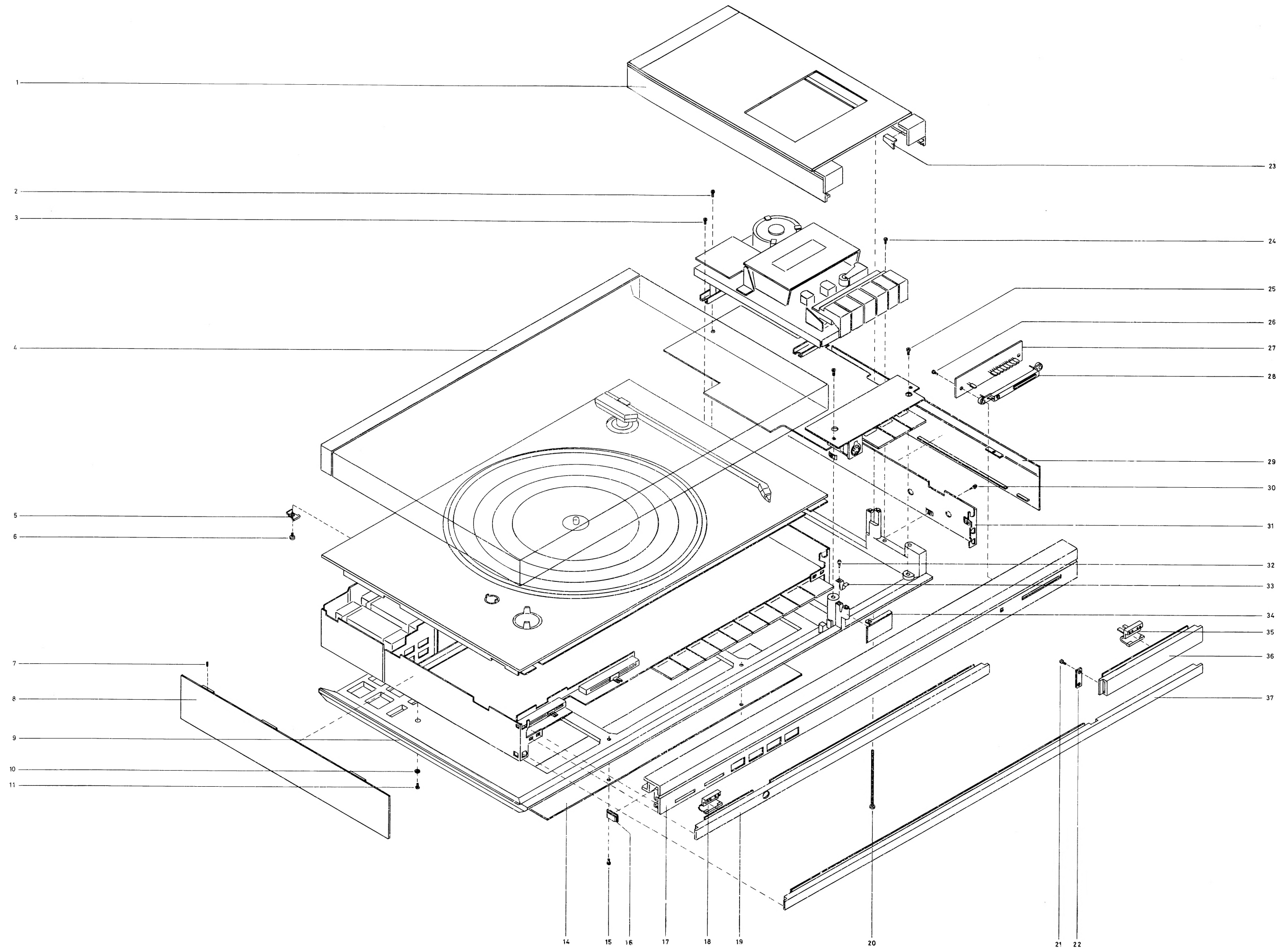
To have the same dial division on the LED indicator as on a VU meter instrument each of 8D5 - 8D8 is connected to two outputs on 8IC1. 8D1 and 8D2 indicate overload. 8IC1 is provided with a constant-current generator so that a short-circuited LED will not damage the IC.

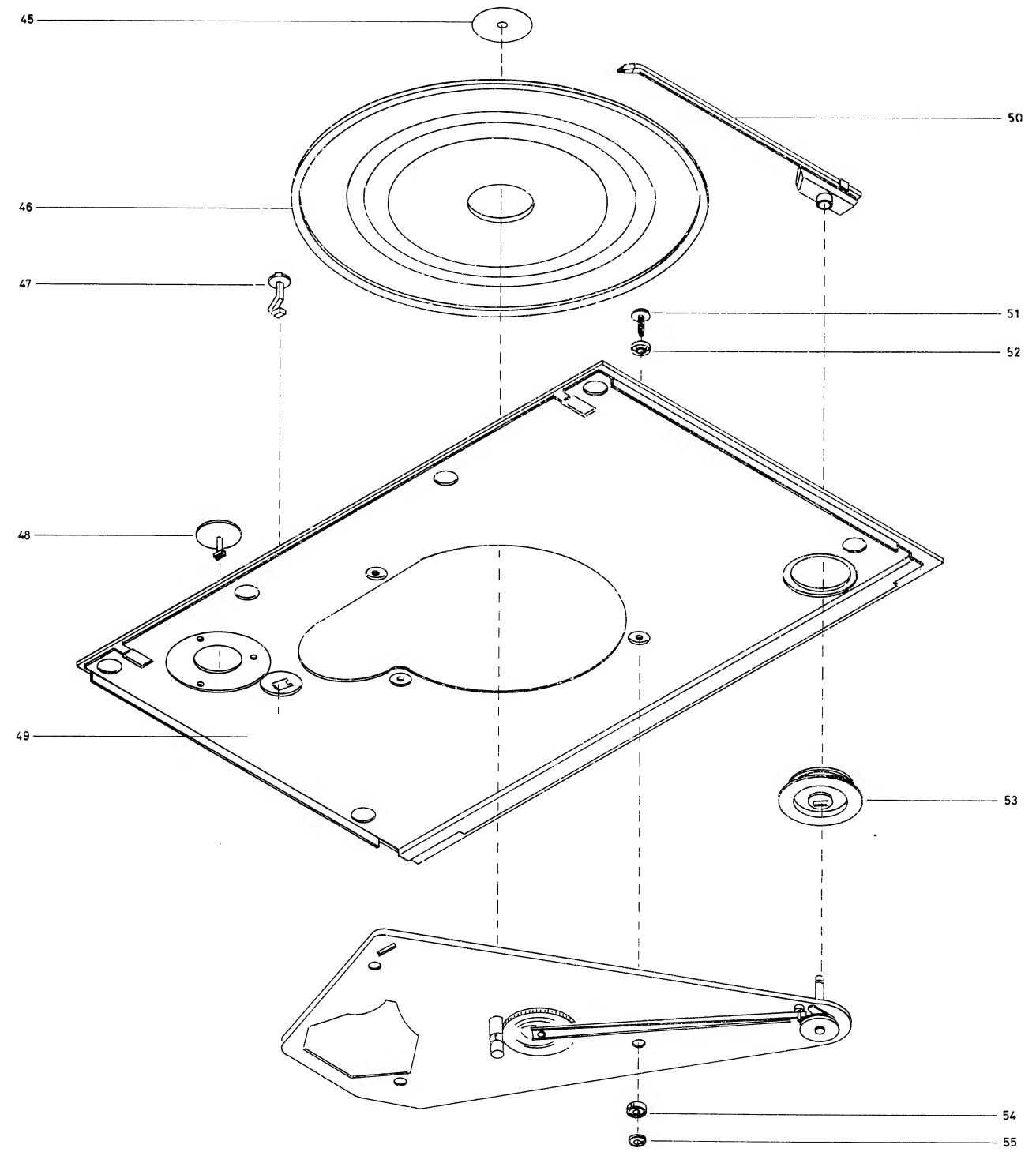
Other circuits of the cassette recorder unit are described in the service manual for Beocord 1100 page 6.



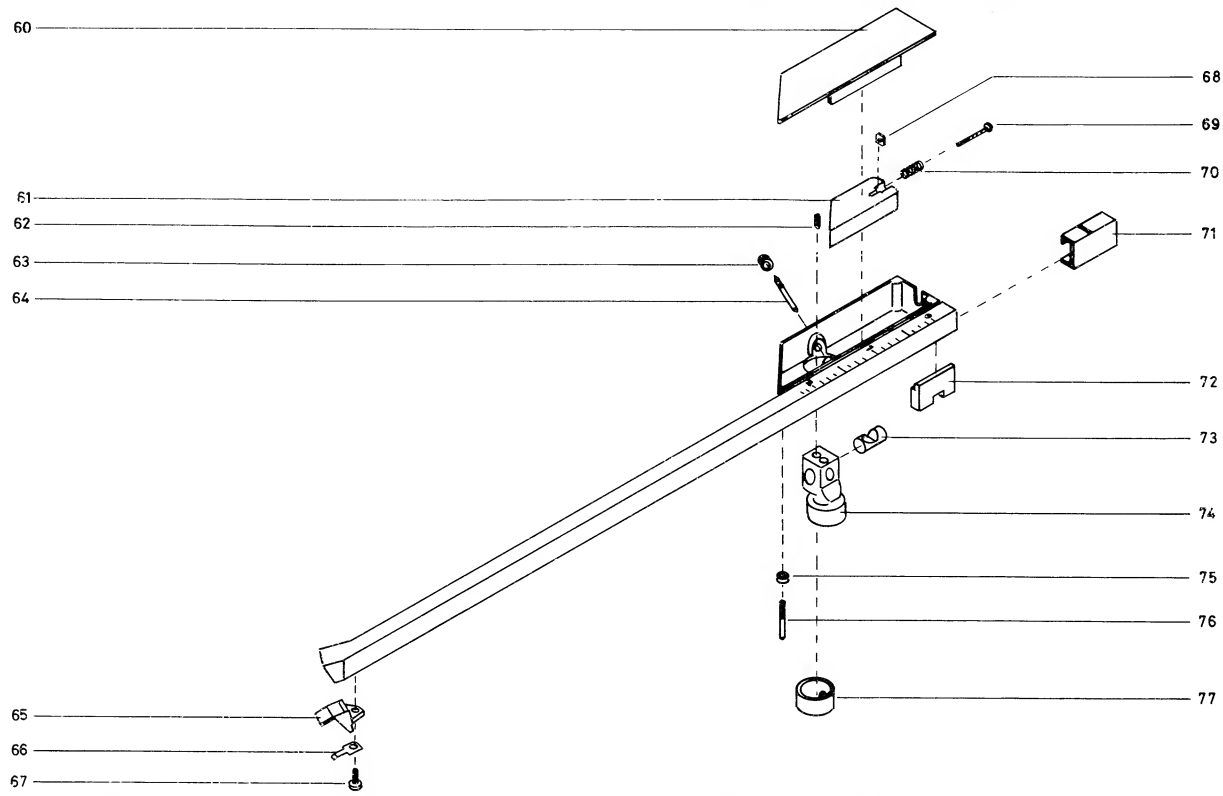
MECHANICAL PARTS LIST

1	2568451	Top moulding	9	3454204	Bottom	26	2038061	Screw AM 3×10 DIN 84
	2560050	Decorative list	10	2622015	Washer	27	8004160	PC unit
2	2038247	Screw AM 3×6 DIN 84	11	2038214	Screw AM 3×8 DIN 84	28	3322045	Cover
3	2038247	Screw AM 3×6 DIN 84	14	3302273	Cover plate	29	3412331	Cabinet, teak
4	3164290	Dust cover, complete	15	2038247	Screw AM 3×6 DIN 84		3412333	Cabinet, rosewood
	3164291	Dust cover, loose	16	3300057	Screw	30	2015006	Screw 9,5×3,5 DIN 7981
	2560053	Decorative list	17	2568316	Front moulding	31	2548128	Bracket
	3010007	Stop for cover	18	3015071	Slide for button	32	2015006	Screw 9,5×3,5 DIN 7981
	2819133	Spring for cover	19	2568240	Front moulding	33	2816140	Spring
5	2640034	Clamp	20	2042026	Screw AM 4×75 DIN 84	34	3164251	Cover
6	2042244	Screw AM 4×6 DIN 84, black	22	2641084	Clamp	35	3015074	Slide for button
7	2070701	Threaded pin M 3×4	23	3300037	Screen	36	2568331	Front moulding
8	3412331	Cabinet teak	24	2038247	Screw AM 3×6 DIN 84	37	2568319	Front moulding
	3412333	Cabinet rosewood	25	2038247	Screw AM 3×6 DIN 84			





45	2805022	Washer	65	7200037	Socket with leads	87	2853043	Switch arm
46	2726108	Turntable	66	2816143	Frame spring	88	2390002	Locking disc 3,2
47	2770184	Button, speed adjustment	67	2033007	Screw	89	2390001	Locking disc 2,3
48	2775518	Lift button	68	2380068	Nut	90	2819122	Spring
49	3458189	Top plate	69	2034913	Screw	91	2622246	Washer
50	2850090	Pickup arm	70	2812072	Spring	95	2992073	Pin
	8954390	Pickup unit MMC 3000	71	3190064	Pointer	96	2622013	Washer
51	2046204	Screw, transport protection device	72	3342033	Counterweight	97	2620067	Washer
52	2938110	Washer for transport protection device	73	3151137	Holder for shaft	98	2395030	Lock disc.
			74	3152201	Holder for arm	99	2810089	Spring
52	2938110	Washer for transport protection device	75	2938096	Bushing	100	3152224	Washer
			76	2072924	Adjustment screw	101	2938135	Pile bearing
53	2623032	Lifting ring	77	2938126	Bushing		2938136	Pick-up arm bearing
54	2938100	Bushing, lock	80	2038222	Screw AM 3×14 DIN 84	102	2851095	Arm
55	2622228	Washer	81	3131121	Switch housing			
60	3162121	Cover	82	7402081	Micro switch			
61	3342034	Counterweight	83	3162095	Cover			
62	2070400	Threaded pin	84	2380011	Nut M3			
63	2905071	Pivot bearing	85	2570056	Arm			
64	2834060	Shaft	86	2853042	Arm			



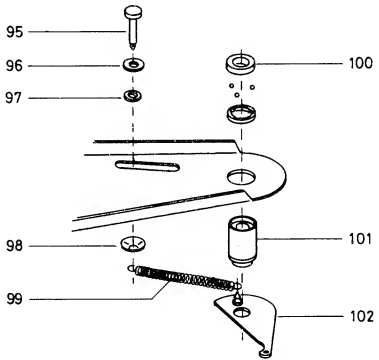
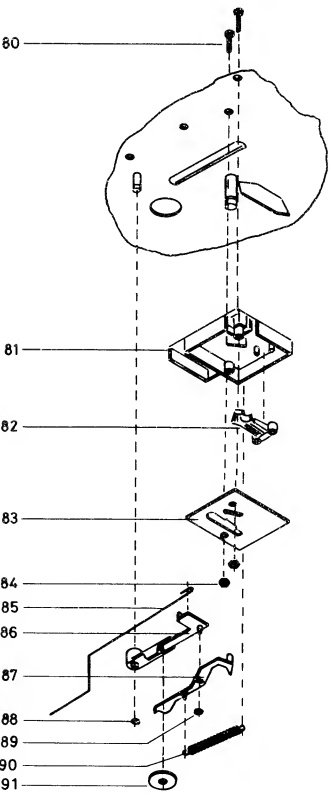
110	7210129	Socket
111	2548126	Bracket
112	2042205	Screw AM 4×6 DIN 84
113	7210129	Socket
114	2036008	Screw AM 2,6×5
115	2542429	Bracket
116	2548129	Bracket
117	2042205	Screw AM 4×6 DIN 84
118	7410014	Pushbutton unit with buttons

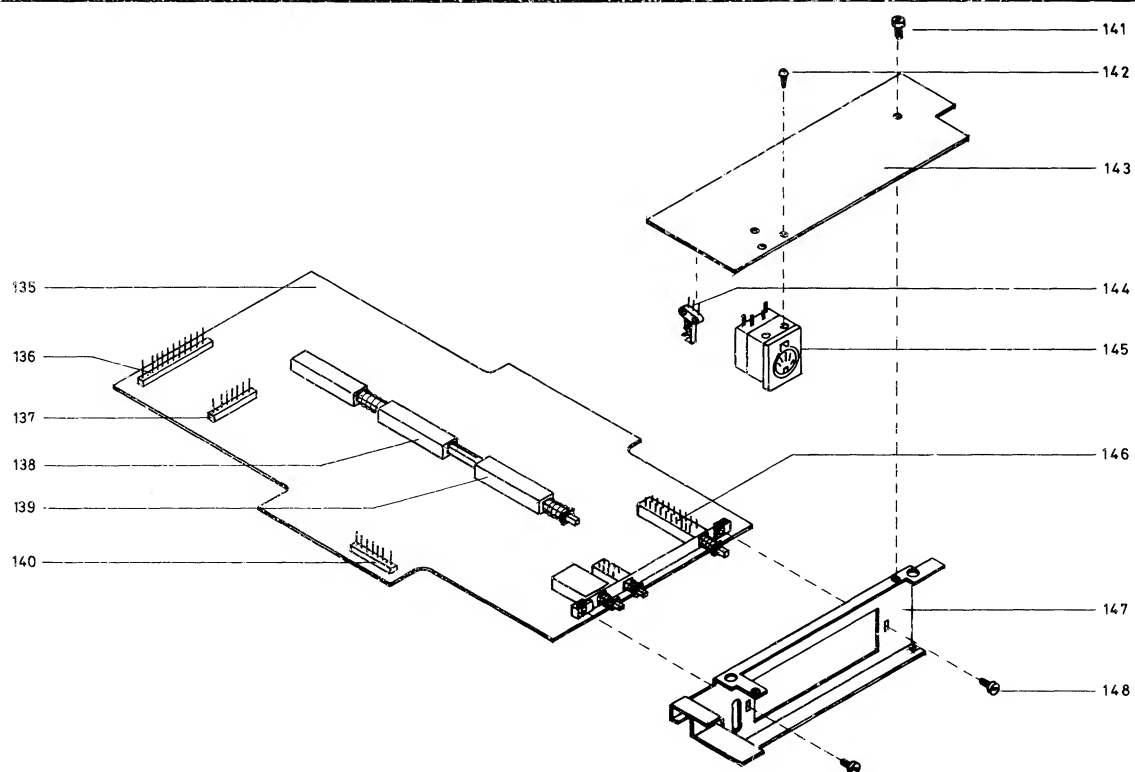
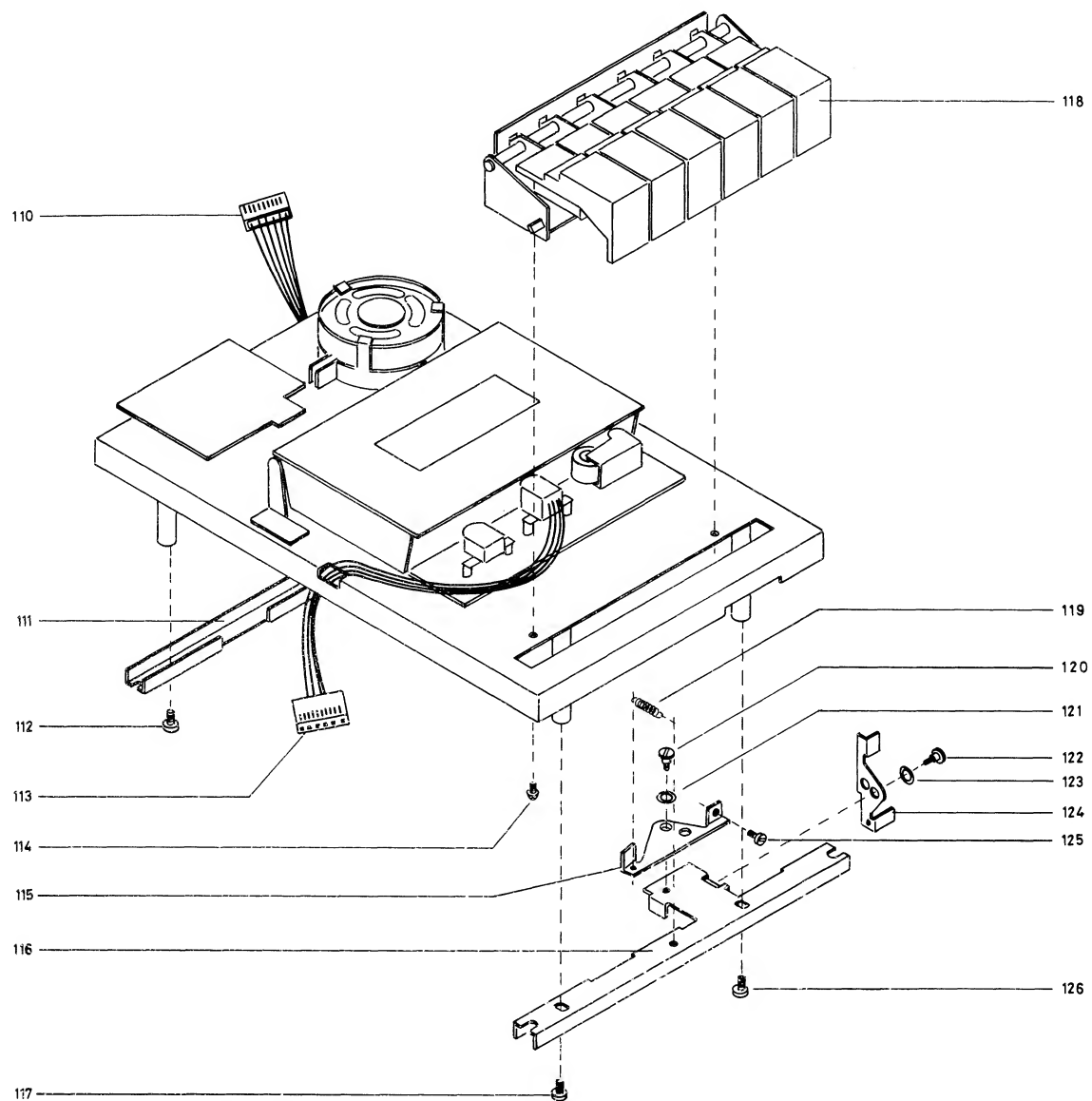
2775519	Button
2775520	Button
2775521	Button
2775522	Button — Eject/Stop
2775523	Button — Pause
2568351	Button — Record

119	2810085	Spring
120	2038066	Screw
121	2622265	Washer
122	2038066	Screw
123	2622265	Washer
124	2542456	Bracket
125	2038247	AM 3×6 DIN 84
126	2042205	Screw AM 4×6 DIN 84
135	8004152	PC unit
136	7220117	Plug
137	7220116	Plug
138	7400130	Switch without spring
139	7400131	Switch with spring
140	7220116	Plug
141	2038206	Screw AM 3×4 DIN 84
142	2013906	Screw 2,84×6,35 ART 4271
143	8004151	PC unit
144	7400152	Switch
145	7210127	Socket
146	7400141	Switch complete
147	2542424	Bracket
148	2038247	Screw AM 3×6 DIN 84

PARTS NOT SHOWN

3391480	Outer carton
3397274	Foam packing, lid
3397275	Foam packing, lid
3397276	Insertion
3532119	Instruction diagram





# CONDITIONS OF MEASUREMENT FOR DIAGRAM 1 AND 2

All DC voltages are measured in proportion to chassis with voltmeter (inner resistance 11 MOhms).

DC voltages are measured with the receiver in position FM and an aerial signal of 500  $\mu$ V (1 mV EMK) with pilot signal, volume on 0.

FM sensitivities are measured at  $\Delta f$  40 kHz,  $f$  mod. 1 kHz and 10W output.

AF sensitivities are measured at 22W output. Balance, bass, treble on 0, volume on max.

Output loaded with 4 Ohms, input 1 kHz.

Mechanical switches are shown in neutral position.

## FM SENSITIVITIES

---

2TP1	60 $\mu$ V (10.7 MHz) through 0.1 $\mu$ F, RG 75 Ohms.
2TP2	170 $\mu$ V (10.7 MHz) through 0.1 $\mu$ F, RG 75 Ohms.
2TP3	600 $\mu$ V (10.7 MHz) through 0.1 $\mu$ F, RG 75 Ohms.

---

## AF SENSITIVITIES

---

4TP100	2.5 mV
4TP200	2.5 mV
2TP100	135 mV
2TP200	135 mV
2TP101	150 mV
2TP201	150 mV
5TP100	500 mV
5TP200	500 mV

---

## NO-SIGNAL CURRENT

---

5TP101	10 mV
5TP201	10 mV or:
25 mA in the collector of 5IC101, 5IC201	

---

## MESSBEDINGUNGEN FÜR SCHALTBILD 1 UND 2

Alle DC Spannungen sind in Verhältnis zu Chassis mit Voltmeter (innerer Widerstand 11 MOhm) gemessen.

DC Spannungen sind mit dem Empfänger in Stellung FM und dem Antennensignal von 500  $\mu$ F (1 mV EMK) mit Pilotton gemessen, Volume auf 0.

UKW Empfindlichkeiten sind an  $\Delta f$  40 kHz,  $f$  mod. 1 kHz und 10W Ausgang gemessen.

NF Empfindlichkeiten sind an 22W Ausgang gemessen. Balance, Tiefton, Diskant auf 0, Volume auf max. Ausgang mit 4 Ohm, Eingang 1 kHz belastet.

Mechanische Umschalter sind in neutraler Stellung gezeigt.

## UKW EMPFINDLICHKEITEN

---

2TP1	60 $\mu$ V (10,7 MHz) durch 0,1 $\mu$ F, RG 75 Ohm.
2TP2	170 $\mu$ V (10,7 MHz) durch 0,1 $\mu$ F, RG 75 Ohm.
2TP3	600 $\mu$ V (10,7 MHz) durch 0,1 $\mu$ F, RG 75 Ohm.

---

## NF EMPFINDLICHKEITEN

---

4TP100	2,5 mV
4TP200	2,5 mV
2TP100	135 mV
2TP200	135 mV
2TP101	150 mV
2TP201	150 mV
5TP100	500 mV
5TP200	500 mV

---

## LEERLAUFSTROM

---

5TP101	10 mV
5TP201	10 mV oder:
25 mA im Kollektor von 5IC101, 5IC201.	

---

DIAGRAM 1

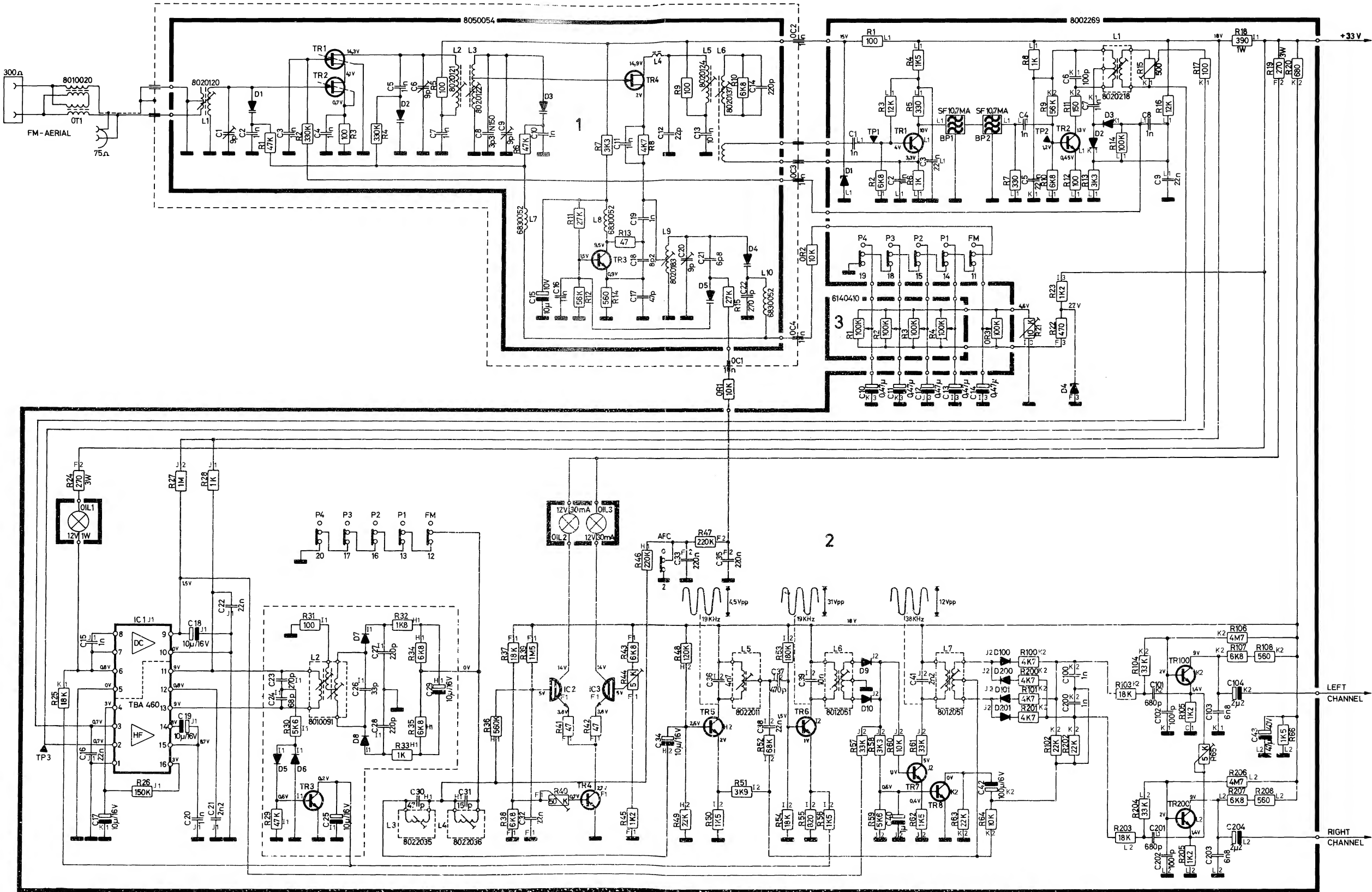
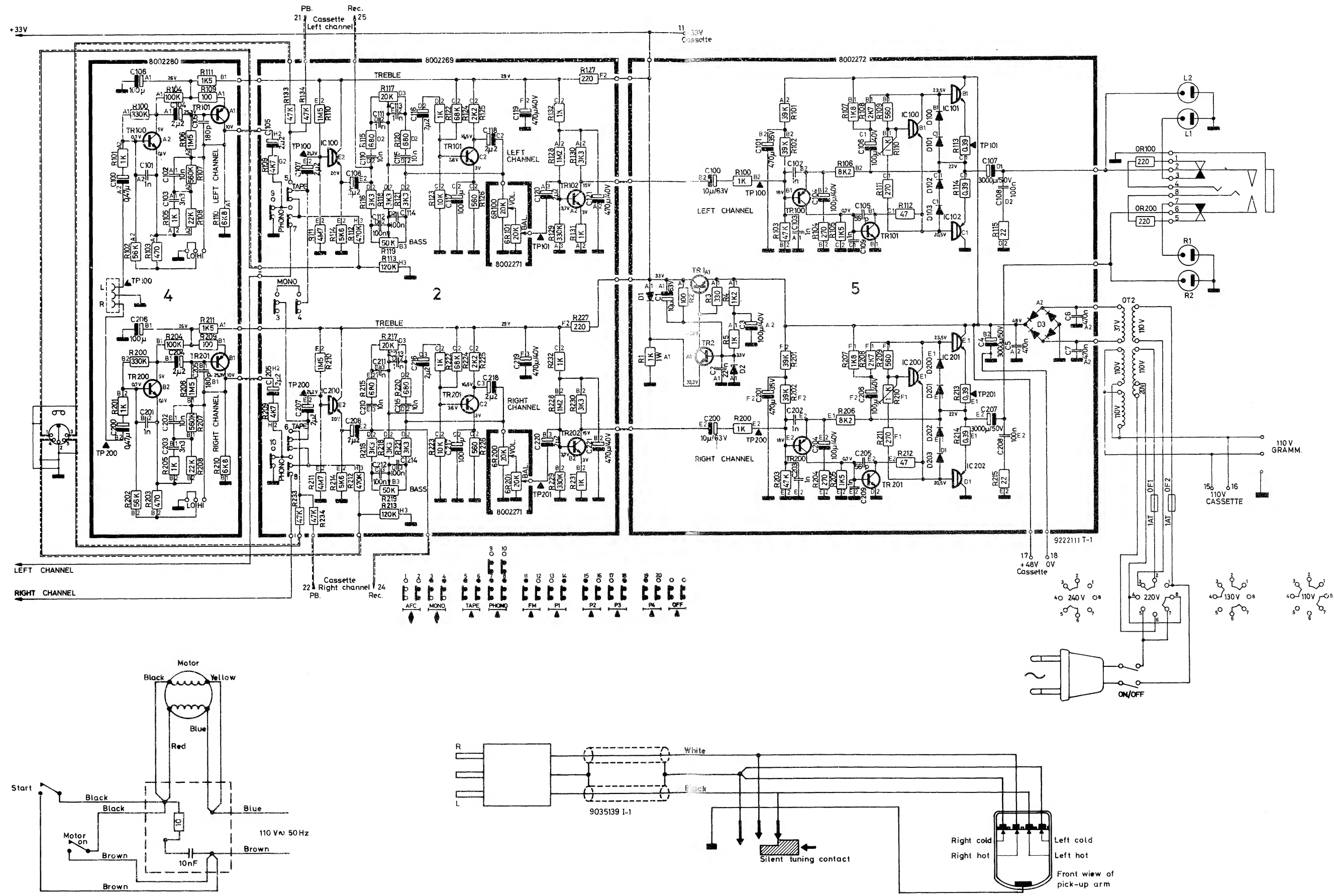


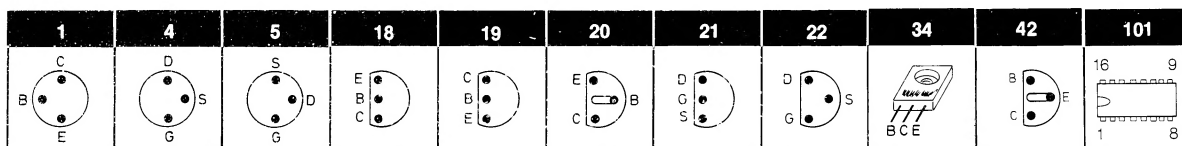
DIAGRAM 2



### TRANSISTOR - DIODE - IC LIST FOR DIAGRAM 1 AND 2

1TR1	8320119	8320069	20	BC 559 B	8320112	42	BF 495
1TR2	8320119		20	BC 214 B		42	BF 255
1TR3	8320112		18	BC 309 B			
1TR4	8320136		18	BC 253 B	8320119	4	U1981 E
2TR1	8320089					21	2N 5245
2TR2	8320089	8320089	42	BF 494		21	TIS 88 A
2TR3	8320097		42	BF 254			
2TR4	8320097				8320136	4	U 1981 E
2TR5	8320095	*8320095	20	BC 549B		5	U 1837 E
2TR6-TR8	8320097		20	BC 184 BN		21	2N 5245
2TR100-TR200	8320138					21	3C2
2TR101-TR201	8320095	8320097	20	BC 547 B		22	3C2 P
2TR102-TR202	8320097		18	BC 237 B		21	TIS 88 A
4TR100-TR200	8320095		20	BC 171 B			
4TR101-TR201	8320069		19	BC 317 B	8320138	20	BC 183 B
5TR1	8320269		20	BC 182 B			
5TR2	8320295		1	BC 207 B			
5TR100-TR200	8320069		20	BC 237 B			
5TR101-TR201	8320097						

\* SPECIALLY SELECTED SPECIMEN./ \*SPEZIELL AUSGESUCHTES EXEMPLAR



2IC1	8340014	101	TBA 460	2IC200	8340028	19	MPSA 13	5IC102	8340023	34	BD 698
						19	SPS 5418				
2IC2	8340054	19	MPSA 13					5IC200	8340028	19	MPSA 13
				5IC100	8340028	19	MPSA 13			19	SPS 5418
2IC3	8340054	19	MPSA 13			19	SPS 5418				
								5IC201	8340027	34	BD 697
2IC100	8340028	19	MPSA 13	5IC101	8340027	34	BD 697				
		19	SPS 5418					5IC202	8340023	34	BD 698

1D1	8300050	BB 103 blue
1D2	8300041	BB 103 green
1D3	8300041	BB 103 green
1D4	8300050	BB 103 blue
1D5	8300032	BA 138

2D1	8300053	ZPD 15V
		BZX 79 15V

2D2	8300131	1N 4148
2D3	8300131	1N 4148
2D4	8340081	25,7 — 28,3V
2D5-D10	8300024	AA 119
2D100-D201	8300131	1N 4148

5D1	8300023	EM 502
		1N 4002
		1N 4003

5D2	8300199	33V 1W
5D3	8310020	B80C3200/2200
5D100-D203	8300131	1N 4148



8004152 PC6

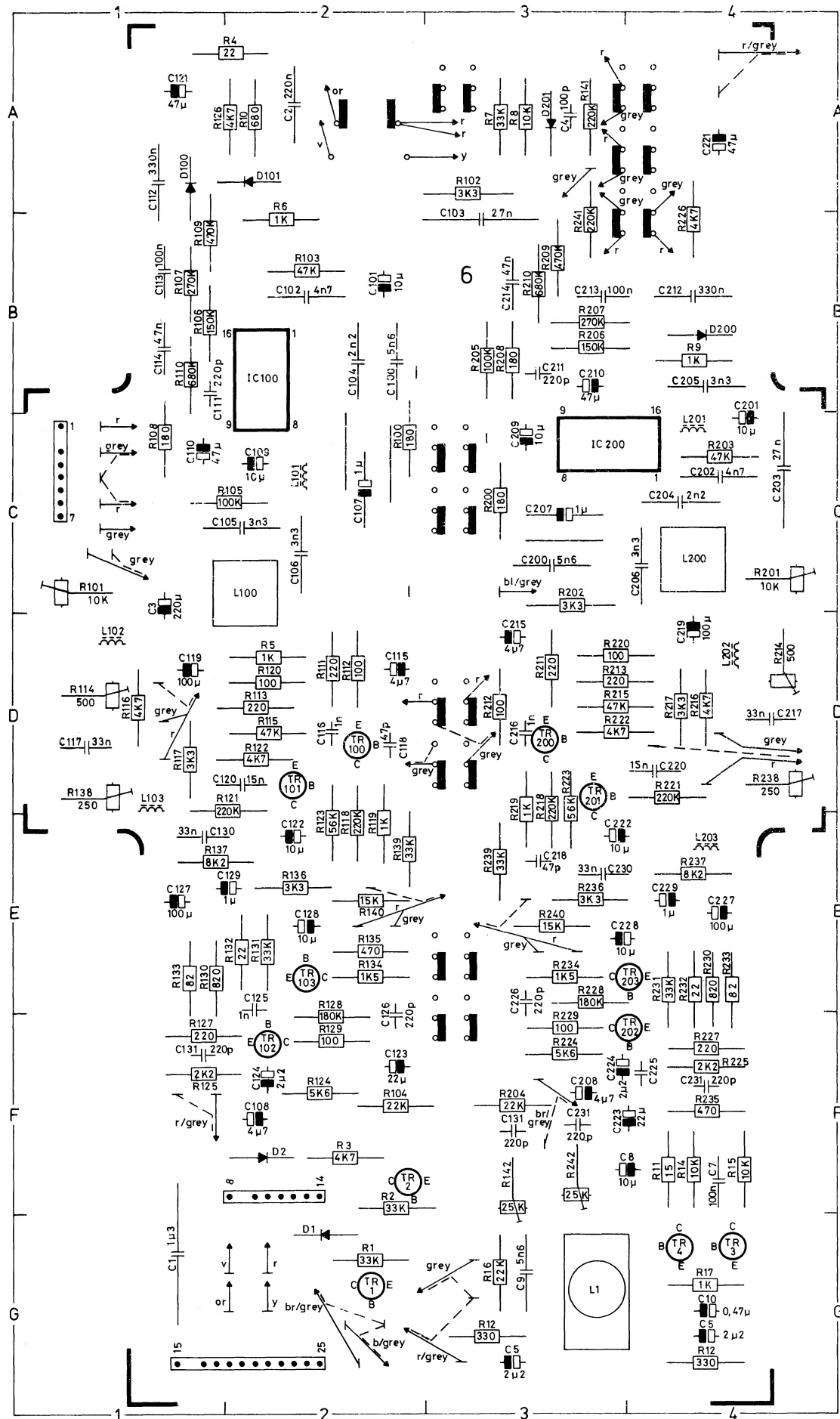
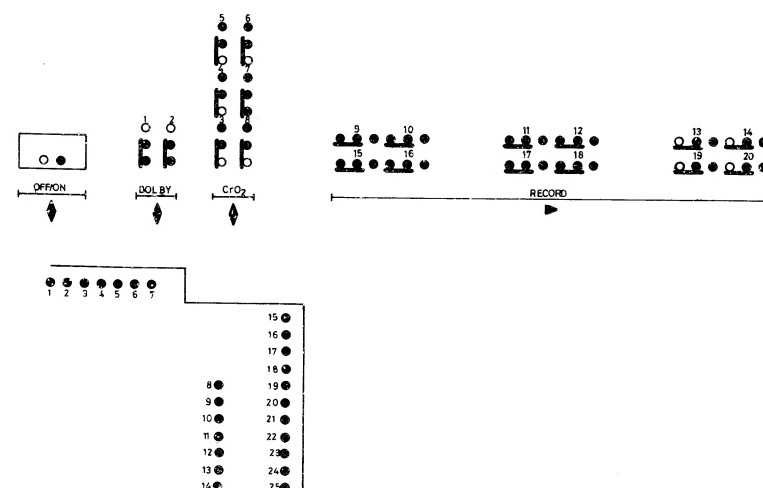
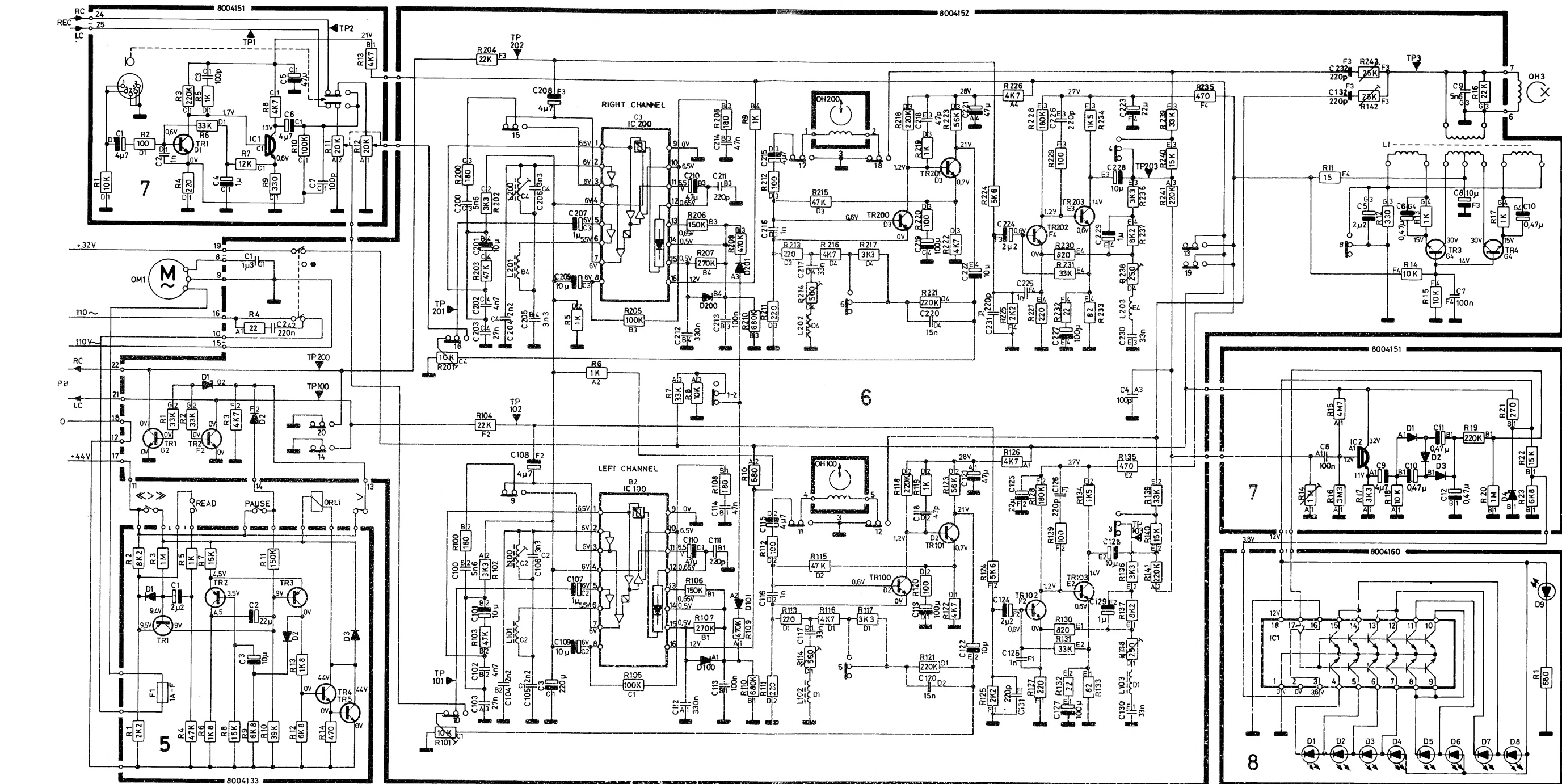


DIAGRAM 3



TEST POINTS  
DC

The voltages on 61C100 and 61C200 have been measured with depressed Dolby-button.

The voltages on 6TR102 - 6TR103, 6TR3 - 6TR4 and 6TR202 - 6TR203 have been measured in position Record.

AC

Playing back from level tape:

TP100 - TP200	700 mV
TP 101 - TP201	40 mV
TP102 - TP202	700 mV

C<sub>r</sub>O<sub>2</sub> button depressed  
and recording  
button in max.

Recording:

TP3	65V 98 kHz
TP1 - TP2	40 mV
TP101 - TP201	40 mV
TP102 - TP202	580 mV
TP103 - TP203	3V

1 red LED must shine at mono signal

Microphone

Recording:

Microphone input	90 $\mu$ V
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TESTPUNKTE  
DC

Die Spannungen auf 61C100 und 61C200 sind mit dem Dolby-Knopf eingedrückt gemessen.

Die Spannungen auf 6TR102 - 6TR103, 6TR3 - 6TR4 und 6TR202 - 6TR203 sind in Position Record gemessen.

AC

Playing back from level tape:

TP100 - TP200	700 mV
TP101 - TP201	40 mV
TP 102 - TP202	700 mV

C<sub>r</sub>O<sub>2</sub> knopf eingedrückt  
und Aufnahme  
Knopf in max.

Aufnehmen:

TP3	65V 98kHz
TP1 - TP2	40 mV
TP101 - TP201	40 mV
TP102 - TP202	580 mV
TP103 - TP203	3V

Bei Mono-Signal muss 1 rotes LED leuchten

Mikrofon

Aufnehmen:

Mikrophoneingang	90 $\mu$ V
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